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TITLE: Investigating the Ethnic Disparity in Prostate Cancer  
Morbidity and Mortality in the Rural Deep South

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<b>13. ABSTRACT (Maximum 200 Words)</b>  The goal of this endeavor was to increase the PI's knowledge, develop his skills and provide him with data whereby he would improve his ability to submit a competitive research proposal to further investigate/reduce the ethnic disparity in prostate cancer morbidity and mortality. To achieve this goal, he did: 1) attend the University of Michigan's Graduate Summer Session and enrolled in <i>Cancer Prevention</i> ; 2) analyze Mississippi and Alabama data on prostate cancer morbidity and mortality and thereby further developed his skill to carry out prostate cancer research; 3) prepared and submitted one presentation abstract for an international meeting (i.e., Congress of Epidemiology, 2001); and, 4) developed a proposal to further investigate the ethnic disparity in prostate cancer (i.e., "Prostate Cancer Disparity in the Deep South: A GIS-Based Deprivation Model," submitted to the DOD, U.S. Army Medical Research and Materiel Command, Congressionally Directed Medical Research Programs Idea Development Awards). This work did add to the extant knowledge on the ethnic disparity in prostate cancer by delineating the problems that occurred in the deep south. As a result of this endeavor, the PI will continue to contribute to the investigation of ethnic disparity in prostate cancer morbidity and mortality for many years.				
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## Table of Contents

Cover.....	1
SF 298.....	2
Table of Contents.....	2A
Introduction.....	3
Body.....	3
Key Research Accomplishments.....	5
Reportable Outcomes.....	6
Conclusions.....	6
References.....	8
Appendices.....	9

## **INTRODUCTION:**

Prostate cancer is a growing social problem. The economic impact is high and is likely to become greater in the future, not only because the number of those diagnosed is increasing steadily, but also because of the increase in the number of screening programs and the number of procedures available. The American Cancer Society estimates that in the United States during 2000, there were over 180,000 new cases of prostate cancer and over 30,000 deaths due to this disease.(1) Many different suspected risk factors have been studied with few showing consistent or strong associations. Age, race and a positive family history of prostate cancer are well documented but poorly understood. For reasons that have not been fully explained, African American men experience a disproportionately higher risk of developing and dying of prostate cancer. To date, the vast majority of investigations have been carried out among urban white men. This work sought to provide pilot data necessary to investigate and, ultimately to, be able to specifically target prevention efforts toward African- and white American men living in the rural deep south. Data for this project were obtained from the Vital Statistics Divisions and the Central Cancer Registries of the Mississippi and Alabama State Departments of Health. This work examined whether there were differences between the rural and urban age-adjusted incidence and mortality rates for cancer of the prostate for all men, and among and between ethnic groups. To further investigate the impact of poor access to health care on disease status, we sought to determine if there were differences in stage of disease at initial diagnosis.

## **BODY**

### **Training Accomplishments –**

The PI attended the Graduate Summer Session in Epidemiology at the University of Michigan, School of Public Health in Ann Arbor, Michigan during July of 2000. While there he took two courses and attended several additional seminars.

One of the courses was entitled "Cancer Prevention" and was taught by Graham A. Colditz, M.D., Dr.P.H., Professor of Medicine at the Harvard School of Medicine and Professor of Epidemiology at the Harvard School of Public Health. This course reviewed approaches to cancer prevention. There was also a discussion of issues in the application of screening and the contribution that screening for cancer has in the reduction of morbidity and mortality. The course also focused on the social and behavioral changes that can achieve the same or greater reduction in cancer incidence as does screening. This course reviewed models for prevention, which emphasized the timing of prevention in the context of the natural history of disease etiology. Levels of intervention resulting from action by health care providers (e.g., counseling and screening), regulatory policy, social structural changes to individual behavior changes were also discussed. Key components necessary for prevention policy, which include an adequate knowledge base, social strategies, and political will, were presented, and

the point of balance among these components was emphasized.

The second course was entitled "Successful Scientific Writing." This course was taught by Paul Z. Siegel, M.D., M.P.H., and Richard A. Goodman, M.D., M.P.H. Dr. Goodman is the Senior Advisor for Science and Policy in CDC's Financial Management Office, and served as Editor-in-Chief of CDC's Morbidity and Mortality Weekly Report (MMWR). Dr. Siegel is Director of the Field Epidemiology Activity at CDC's National Center for Chronic Disease Prevention and Health Promotion. The purpose of this course was to enable public health and health care professionals to communicate the findings of their research and investigations more effectively and to expedite publication of their manuscripts. This course sought to teach the principles of effective writing and strategies for publication from an epidemiologist's perspective. This course addressed the need for these skills by introducing the following topics: basic organization of journal articles; principles of style for writing in epidemiology; a systematic approach to the process of writing and publishing an article; strategies for dealing with requests of journal editors; and controversies in scientific writing and publishing. These topics were addressed through a combination of didactic presentations, in-class discussions and exercises, readings, and homework assignments, including the preparation of written reports that were critiqued in the classroom.

### **Research Accomplishments –**

During the first phase of the project, I met with the with collaborating established investigator, David Schottenfeld, M.D., at the University of Michigan in Ann Arbor. At this meeting we reviewed the proposal, made plans for data acquisition, and outlined talking points for analysis to be considered by the other investigators. This outline was shared and, after review and consideration, changes and/or additions were recommended and discussed. Once a consensus was reached, a request for those data items was forwarded to the Alabama and Mississippi State Departments of Health Central Cancer Registries and Divisions of Vital Statistics. Also during this phase, I began to review the current literature directly or indirectly related to prostate cancer.

The second phase of the project saw the receipt of the requested data. Once the data were received, formatting for the new database was undertaken so that the differences between the Alabama and Mississippi data were resolved. At this point, frequencies were run, and the whole data set was reviewed so as to identify discrepancies and seek their resolution. Also during this phase, population estimates by age and racial group for each of the counties, as well as information regarding the year 2000 standard million population, were obtained and entered into a database so that age-adjusted standardized incidence and mortality rates could be calculated. In conjunction with this effort, counties were designated as rural or urban using a standard Census definition of 50% or more rural households in the county.

As results have been produced, they have been shared with the collaborating investigators. It was determined very early in this investigation that the data from these two sources were not sufficient to explain all the differences and disparities between rural and urban prostate cancer, and we began to develop a plan to investigate this question further. It was also at this time that, during my literature review, I came across

some of the work of Michel P. Coleman in Great Brittan on deprivation.(2) Coleman and colleagues have brought forth the idea that the better survival rates from cancer in affluent neighborhoods compared to deprived neighborhoods are not due to chance, but rather, to a complex mechanism that is more than socioeconomic status and more than the stage of disease at first diagnosis. They have used a variety of data sources to compile a deprivation index. Based on their work, we began to develop our plan for investigating these phenomena, which would include the development of our own deprivation index. Thus we began to outline a proposal based on the preliminary/pilot data to further investigate this subject.

The third phase of this project saw the formulation of research questions and the development of two proposals: one for the Idea Award in response to the DOD PCRP Announcement and the other in response to a Program Announcement issued by the National Cancer Institute.

Additionally, we have submitted an abstract for consideration to the 2001 Congress of Epidemiology and begun a draft of a manuscript that is to be submitted to The Journal of Rural Health.

## **KEY RESEARCH ACCOMPLISHMENTS**

1. We examined nearly seven thousand new cases of prostate cancer and over 2000 deaths attributable to this dread disease for the time period 1996 and 1997.
2. We found no difference in the age-adjusted prostate cancer incidence rates between rural and urban men. However, urban African American men were found to have a higher rate than their rural counterparts (rate ratio 1.17,  $p < .05$ ).
3. Overall African American men did have higher age adjusted incidence rates than did white men (rate ratio = 1.61,  $p < .01$ ). This was more pronounced in urban settings (rate ratio = 1.72,  $p < .01$ ) than in rural ones (rate ratio = 1.53,  $p < .01$ ).
4. Rural white men die of prostate cancer at a higher age-adjusted rate than did their urban counterparts (rate ratio = 1.15,  $p < .05$ ). This may relate to the finding that nearly twice as many rural white men presented with distant metastases at first diagnosis than did urban white men (6.7% versus 3.4%, respectively).
5. African American men living in urban areas died at nearly three times the rate (mortality ratio = 2.82,  $p < .01$ ) of white men. In rural areas this difference reduced to 2.32 times more often ( $p < .01$ ).
6. The proportion of tumors unstaged at diagnosis (an indicator of the quality

of medical care received) was greater for rural, as compared to urban, residents regardless of racial groups. For all men, the odds ratio was 1.57 ( $p < .005$ ); for African-American men it was 2.32 ( $p < .005$ ), and for whites it was 1.42 ( $p < .05$ ).

## REPORTABLE OUTCOMES

1. An abstract entitled "Rural vs. Urban Aspects of Prostate Cancer Disparities" has been submitted to the International Congress of Epidemiology for consideration as a presentation.
2. A presentation entitled "Rural versus Urban Aspects of Prostate Cancer" was given by the PI for Research Grand Rounds at the University of Alabama School of Medicine, Tuscaloosa Program.
3. Dr. Higginbotham received a "Certificate of Participation" for his attendance at the University of Michigan School of Public Health Graduate Summer Session in Epidemiology.
4. A grant proposal entitled "Prostate Cancer Disparity in the Deep South: A GIS-Based Deprivation Model" was submitted to the Department of Defense, Prostate Cancer Research Program of the U.S. Army Medical Research and Materiel Command's Office of the Congressionally Directed Medical Research Programs Idea Development Award. This proposal was not recommended for funding.
5. A grant proposal entitled "Deep South Prostate Cancer: Disparity from Deprivation" has been submitted to the National Cancer Institute in response to their program announcement entitled "Geographic-Based Research in Cancer Control and Epidemiology." This proposal is currently under review.
6. As a result of this endeavor, a database of prostate cancer morbidity and mortality in Alabama and Mississippi for the years 1996 and 1997 has been developed. This database is able to supply incidence and mortality rates at the county level. This database also contains such information stage at first diagnosis, first treatment modality, race, etc.

## CONCLUSIONS

The goal of this endeavor was to increase the PI's knowledge, develop his skills and provide him with data whereby he would improve his ability to submit a competitive research proposal to further investigate/reduce the ethnic disparity in prostate cancer

morbidity and mortality. As outlined in this report it can be concluded that he has achieved this goal. The work accomplished thus far has added to the extant knowledge on the ethnic disparity in prostate cancer by delineating the problems that occurred in the deep south. As a result of this endeavor, the PI will continue to contribute to the investigation of ethnic disparity in prostate cancer morbidity and mortality for many years.



## REFERENCES

1. <http://www.cancer.org>
2. Coleman MP, Babb P, Damiecki P, et al: Cancer Survival Trends in England and Wales 1971-1995 Deprivation and NHS Region. Office of National Statistics, Her Majesty's Stationary Office, London 1999.



**ABSTRACT SUBMITTED  
FOR REVIEW**

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## **RURAL VS. URBAN ASPECTS OF PROSTATE CANCER DISPARITIES**

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Comparing rural and urban aspects of cancer is important not only because it may lead to new etiologic lines of investigation, but also because it helps to determine the appropriate allocation of health care resources according to need. This investigation sought to determine if there were differences between the rural and urban age-adjusted incidence rates for cancer of the prostate. It also sought to determine if such differences existed for the cancer mortality. Lastly, to investigate further the impact of poor access to health care on disease status, it was sought to determine if there were differences in stage of disease at initial diagnosis. This was examined for all men and for African-Americans and whites separately. Data was obtained from the Mississippi Department of Health Central Cancer Registry and Division of Vital Statistics. There was no difference in the age-adjusted incidence rates between rural and urban men nor within ethnic groups. Rural white men did die of prostate cancer at a higher age-adjusted rate than did their urban counterparts (rate ratio=1.15,  $p < 0.05$ ). However, the most remarkable finding was that the proportion of tumors unstaged at diagnosis (an indicator of the quality of medical care received) is greater for rural, as compared to urban-residents regardless of racial group. For all men the odds ratio was 1.57 ( $p < .005$ ), for African-American men it was 2.32 ( $p < .005$ ) and for whites it was 1.42 ( $p < .05$ ). While this study has limitations, findings suggest that rural male residents in Mississippi and rural African-American men in particular, have less access to, or utilization of, early cancer detection programs and/or quality medical care.

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